Fall 2014 SEI Research Review Eliciting Unstated Requirements at Scale (EURS)

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Unstated Needs are Elusive but Important

"*It's really hard to design products by focus groups. A lot of times, people don't know what they want until you show it to them*." (Steve Jobs)

"*If I had asked people what they wanted, they would have said faster horses*." (Apocryphal, attributed to Henry Ford)

When needs go unrecognized, critical features get overlooked, including:

- Non-functional requirements that drive architecture
- Innovative product and service features that sustain customer loyalty

And if left undiscovered, can result in:

- Stakeholder/user disruption and frustration
- Requirements volatility, expensive rework, delays

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Existing Requirements Elicitation Methods

Limitations in what requirements specifications convey:

- Needs that are more likely to be salient to the stakeholder/user
  - Don't know what they don't know
- Motivation for requirements is often lost or missing

Other limitations with existing methods include:

- Timeboxed, workshop-style meetings that can't be held virtually
- Missing stakeholders
- Won't work at scale

FY14 focus

EURS aims to develop and validate a scalable method for determining the unstated needs of stakeholders, which result in a more innovative set of requirements as the basis for subsequent system design, implementation, deployment, sustainment, and modernization.

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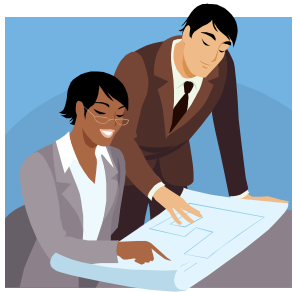
Overview of SEI KJ+ Approach

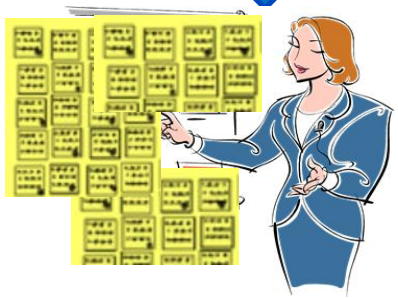
Start with **known requirements** (obtained by existing elicitation method)

Step 1: Design open-ended, **probing** questions to interview users on **extreme** positive and negative **experiences**

Step 2: Conduct interviews **focusing on context** not solutions (asking "how" and "why")



Step 3: Mine interview output and **characterize experiences** in terms of action, motivation, context)



Step 4: Look across characterizations to Identify **themes of experience** (KJ+ Affinitization)

Step 5: Derive **unstated needs** and brainstorm candidate **innovative solutions**

Step 6: Triage need-solution pairs into:

- **Delighters**
- Satisfiers
- Must-be's

(Kano analysis)

Innovative Requirements

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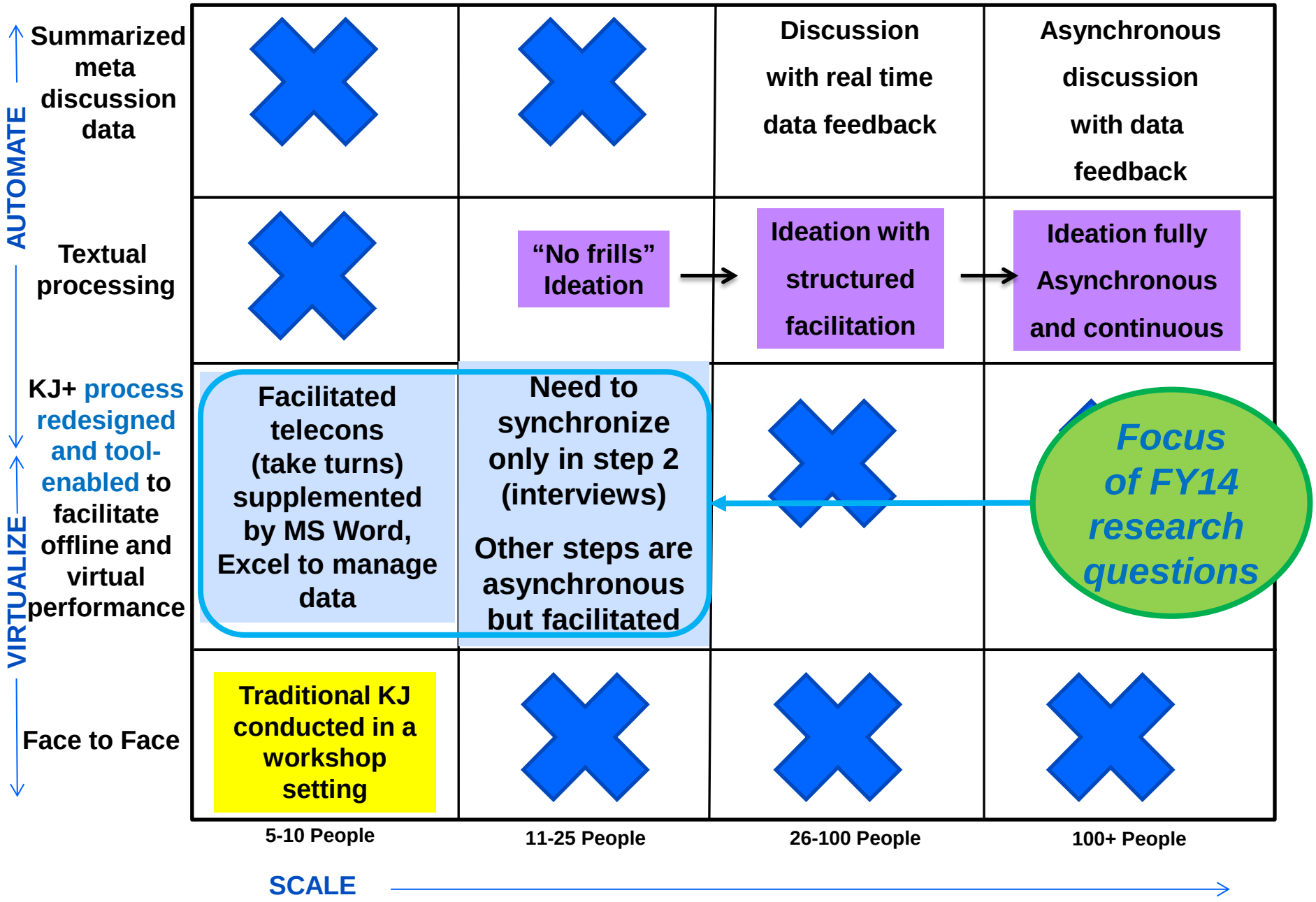
EURS Research Focus



FY14 Task structure

1. Redesign the KJ method for virtual, asynchronous use to the maximum extent possible with minimal technology, creating KJ+
2. Develop pilot training, process scripts, briefing templates, and tooling to support pilot of KJ+
3. Select pilot candidate and train team
4. Conduct a small-to-moderate scale A-B comparison experiment
    a) Project requirements are developed without KJ+
    b) KJ+ is then applied
    c) New requirements are identified and effort is recorded
5. Analyze results

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FY14 Accomplishments

Key SEI Activities/Contributions

- Adapted existing workshop-based method for distributed use
- Conducted A-B Comparison: pilot was successful
- Pilot collaborator intends to adopt the KJ+ method and has funded our continued engagement
- Will pursue publication in Requirements Engineering Journal

Revisiting our Research Questions: Can KJ be adapted for:

- Virtual, small-to-moderate scale use?
- Identifying innovative requirements that anticipate unstated needs?
- Increasing end-user satisfaction?
- Mitigating requirements volatility?
- Reducing sustainment and modernization costs?

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Next Steps

Ultra-scale experiment allowing much more participation in developing requirements:

- Increase # of participants by introducing ideation
- Affinitize visually as well as virtually
- Automate identification of relevant ideas to keep others informed of what might interest them
  - through machine learning and probabilistic topic modeling

Contact us if you would like to collaborate.

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